3. The position of Senior Director, Legislative Systems Impact Planning & Development, was created specifically for the purpose of assuring compliance with the specifications of the Telecommunications Act of 1996 ("1996 Act") and subsequent federal and state regulations, as well as the outcomes of negotiations and arbitrations, as those activities relate to OSSs. The tasks involved include the creation of new OSSs, the development of previously unnecessary interfaces, and the modification of existing OSSs. In my current position, I have responsibility for all planning, specification, program management, and legal and regulatory support for the OSS changes resulting from the 1996 Act.

4. Prior to my current position I served as Senior Director, Service Assurance & Activation Systems. In this capacity I was responsible for the systems engineering, development or integration, testing, and deployment of a set of OSSs used specifically for the surveillance, monitoring, and testing of the USWC network. In that position I supervised an annual budget of approximately $20 million of systems expense.

5. Prior to my employment with USWC, I worked at AT&T -- Bell Laboratories for sixteen years. During that employment I held various positions as Member of Technical Staff, Supervisor, and Department Head supporting the development of OSSs sold within the telecommunications industry, both in the United States and abroad. These systems included several large operations support systems still used by a majority of the Bell Operating Companies ("BOC") for trunk testing, design services testing, and billing data collection.

6. Since the issuance of the FCC's First Report and Order, I have participated in various hearings, made numerous state legal filings (generally in the form of testimony), and participated in numerous technical negotiations with multiple CLECs. I believe I have a basic understanding of what the FCC required in the First Report and Order with respect to access to OSS functionality and data (specifically that new entrants have substantially the same quality and timeliness of access, functionality, and information as that to which USWC has access).

USWC Implementation of the Commission's OSS Access Requirements

7. In this Affidavit, I outline USWC's Systems Access Plan for complying with the Commission's First Report and Order as it pertains to OSS access requirements, in support of pre-ordering, ordering, provisioning, maintenance and repair and billing functions. In the following paragraphs I will:

- outline changes to the OSS access plans necessitated by the FCC's First Report and Order;

- describe USWC's OSS access capabilities that will be available to CLECs on January 1, 1997;

- describe the USWC plan for OSS access capabilities after January 1, 1997;

- provide information in support of why USWC cannot complete all OSS electronic access requirements by January 1, 1997; and

- demonstrate that no material harm will occur to CLECs from USWC's proposed phased-in electronic access deployment schedule, based on USWC's knowledge from negotiations with CLECs.

8. To put the incorporated information into proper context, a high-level summary of USWC's proposal for fully meeting the Commission's OSS electronic access mandates follows. USWC understands the importance to local exchange competition which the FCC has ascribed to access to ILECs' OSSs. USWC should be deemed to meet the requirements of the Commission's First Report and Order through the implementation of the following plan.

USWC is in the process of developing a CLEC Gateway which will:

- support pre-ordering, ordering, provisioning, and basic maintenance and repair capabilities,[2] in support of resale of basic POTS services[3] by January 1, 1997;

- support pre-ordering, ordering, provisioning, and basic maintenance and repair capabilities for unbundled network elements and resold design service circuits (i.e., special services)[4]

---

[2] "Basic" maintenance and repair capabilities include the abilities to do the following electronically: add, delete, cancel, or check the status of a trouble ticket. A phone call to a dedicated CLEC maintenance center will be required to escalate troubles or review trouble histories until enhanced maintenance capabilities are completed.

[3] Basic services, or POTS, generally involve only a loop, line equipment, telephone number, and associated switch calling features to enable the service. Once the central office equipment and outside facilities construction has been completed, no additional engineering or special equipment is required to provide the service. Examples of POTS include (but are not limited to) flat rate residence or business lines, CENTREX lines, BRI ISDN, switch verticle features, CLASS services, Advanced Intelligent Network ("AIN") services, and hunting arrangements.

[4] Design services require specific engineering design to ensure that the appropriate transmission or signalling conditioning, or other required components, have been defined to meet the technical requirements of the ordered service. Examples of

with OSS electronic access functionalities by July 1, 1997, along with enhanced trouble management functions[5] for POTS resale;

- support enhanced trouble management for unbundled elements and design services with electronic access functionalities by November 1, 1997.

9. USWC chose the order of the products supported *via* electronic interfaces based on its expectation of market volumes for these services. Based on conversations and communications between USWC and various CLECs, it appears that the initial market demand for resale of USWC's traditional, existing services is expected to far exceed the demand for resale for design services or for buildout of unbundled elements. Furthermore, design services typically have longer order-fulfillment intervals, due to the increased complexity involved. It would not be unusual, for example, for an order to take three months to deploy. The incremental time associated with processing such orders manually (during the first half of 1997) would be negligible as a percentage of the overall time necessary for total order completion.

10. Supporting the provision of unbundled network elements by January 1, 1997, has proven impossible, for a number of reasons. First, such services have not been available previously on a widespread basis and lack specific product definition. While the FCC has described, generally, certain of these elements, such as "unbundled loops" and "unbundled switching," these descriptions do not equate to detailed product definitions. State jurisdictions are in the process of adding the specifics, aided by the on-going negotiations processes. An "unbundled loop," for example, may be defined from a product perspective as a loop incorporating a certain electronic component (e.g., two or four wire, loaded or unloaded), and/or a service component (e.g., voice grade service or ISDN-capable). Until the actual product offering is clearly defined, the information cannot be input into any OSS system. As a result, the OSSs are incapable of "supporting" the offering. Thus, much of the OSS access and support functionality awaits the conclusion of negotiations and state action with respect to product definition and price.

---

design services include (but are not limited to) point-to-point private lines, multi-point private lines, foreign exchange circuits, DS0, DS1 and higher rate, T-1, SONET, PBX, PRI ISDN, and WATS services.

[5] Enhanced trouble management includes electronic access functions supporting the retrieval of trouble histories, trouble report escalation where appropriate, and on-line retrieval of test results.

Changes Necessitated By FCC Order

11. Prior to the issuance of the Commission's First Report and Order, USWC was operating under a reasonable statutory analysis that the 1996 Act required only that ILECs provide access to those OSSs necessary for purposes of call routing and control. Furthermore, USWC was not subject to any state commission mandates with respect to OSS access. In light of these facts, USWC planned to provide to CLECs access to its Line Information Database ("LIDB"), operator services and directory assistance listings, certain of its AIN elements and basic billing data.

12. The Commission's interpretation of the statutory requirements contained a much more expansive view of the 1996 Act's requirements with respect to network unbundling as it pertained to OSS access, particularly in the areas of pre-ordering, ordering, provisioning, and maintenance and repair. That interpretation necessitated a substantial amount of internal systems development work for USWC to support process modifications required for interconnection, resale and network element unbundling. As a result, USWC was forced to revise its systems access plan in August, 1996, to focus on access parity to OSS functionality as between USWC itself and CLECs.

13. USWC's revised OSS access plan is directed at meeting the OSS unbundling requirements in the First Report and Order, as well as creating OSSs that can support both the POTS resale product and the purchase of unbundled network elements. This plan requires two OSS components. First, USWC must make a number of predicate "basic" or "fundamental" changes to the OSS systems to make them internally capable of supporting interconnection, resale and unbundling. Some of this work, as discussed above, is totally dependent on the establishment of completed product definitions. These changes are required to provide services to the CLECs and to be able to bill for the services provided and are independent of CLECs' electronic access to USWC's OSSs with respect to end-user service order processing or follow-up customer care functions. Second, an electronic interface is being created which will allow CLECs to access USWC's OSSs' functionalities and information in order to provide service to their end-user customers in a manner that will enable CLEC service representatives to handle a customer contact in substantially the same manner and in a similar timeframe as a USWC customer service representative would do. This interface will employ mediation to protect the integrity of the OSSs, as well as allay any privacy concerns with respect to customer information.

14. USWC will, however, be incapable of meeting all the OSS access requirements subsumed in the concept of "electronic access to OSS" suggested by the Commission in its First Report and Order by the January 1st date established by that Order. The extremely short timeframe established by the Commission (i.e., less than five months) to accomplish the material and substantial changes in

USWC's normative OSS operating environment has proven simply impossible. Support for this impossibility is provided below at paragraphs 25 to 36.

15. Given USWC's inability to deliver ubiquitous electronic capabilities by January 1st, a proposal is offered to phase-in electronic interfaces in a reasonable and timely manner. This phase-in will occur both with respect to services (i.e., POTS first, followed by design services and unbundled elements) and functions (support for pre-ordering and ordering, maintenance and repair, etc.). This is the most rational approach, given the standards work already developed with respect to POTS support, and in light of the fact that certain functional support must occur in tandem to be meaningful. For example, pre-ordering and ordering support capabilities cannot be separated from those of maintenance and repair. No CLEC would agree to resell a telecommunications service that could not be maintained.

OSS Interface Capabilities for January 1, 1997

16. As briefly mentioned in paragraph 13 above, a substantial number of predicate "basic" or "fundamental" systems changes are required to USWC's internal OSSs to make them capable of properly supporting interconnection, resale and unbundling, independent of electronic access to third parties. These changes involve modifications to the set of OSSs that USWC uses to create orders, assign and install services, maintain and repair circuits, and bill appropriately for the work. Systems must be able to support new product definitions where none previously existed, as well as identify the orders for services and elements as being resold or unbundled elements. Fields need to be created or changed to identify CLECs as the new customers of record for resold or unbundled element services. The flow of orders through other provisioning and maintenance systems must propagate these new data fields to their databases. Changes needed to support unbundling of elements are even more complex, since this type of circuit was never envisioned by the system's original designers. This comprehensive set of fundamental systems changes is necessary to support USWC's ability to resale services and unbundle network elements and maintain them, whether or not orders for those services were processed *via* the electronic interface or *via* other manual processes. Nearly all of these fundamental changes to the OSS systems will be completed by January 1, 1997. Certain billing systems changes, which are dependent upon the state commissions' approval of detailed product definitions with rates, are not expected to be completed until later in the first half of 1997.

17. Above and beyond these fundamental changes to USWC's core OSS systems is the development required to provide electronic interfaces for CLEC access to USWC's pre-ordering, ordering, provisioning, maintenance and repair and billing systems. This type of system change involves the development of a systems access gateway such that CLECs receive nondiscriminatory presentations to the OSS systems when working with their customers. USWC is implementing two

different types of electronic interfaces to support these third-party OSS access requirements. As discussed more fully below, an "on-line" interface will be provided to support pre-ordering, ordering, provisioning, and maintenance and repair; while a daily and monthly "batch" interface, as appropriate, will be provided with respect to billing data.

18. For "on-line" interfaces, USWC will deploy an electronic gateway solution similar to that briefly described in the Commission's First Report and Order.[6] With the exception of actual order writing, the interface will link the CLEC's customer service representatives to the very same systems used by USWC's customer service representatives. The "gateway" functionality will act as a mediation or control point between CLECs and USWC's OSSs. It will be responsible for implementing security for the interface, protecting the integrity of USWC's network and its databases, and ensuring that information privacy is maintained (e.g., Customer Proprietary Network Information or "CPNI"). With respect to order writing, the process of converting an on-line Local Service Request[7] into a USWC service order in software has proven to be extremely difficult to design and implement, and will not be available in the initial USWC interface. Instead, the CLEC will be able to submit a Local Service Request ("LSR") electronically *via* the interface, and the software will deliver that request to a USWC order writer who will translate the service request manually into a USWC service order.[8] Similar manual processes will support order confirmation and status checking, because these two capabilities are directly related to the order creation software. As outlined above, USWC intends to phase in the "on-line" electronic OSS interface capabilities, based on the type of products supported *via* the gateway, beginning with support for the resale of POTS services by January 1, 1997, providing CLECs with access comparable to that of USWC with respect to such services. The software architecture of the USWC mediation gateway is described in more detail in Attachment C.

19. Unlike the interface necessary to support pre-ordering and ordering, provisioning, maintenance and repair, the transmission of billing information does not require real-time interfaces. Billing information is sent to the CLECs on a daily and monthly interval, and each of these transmissions contains a large volume of data. This is characteristically very different that the conversational "handshake" of a request for a telephone number or the submission of a trouble ticket while the customer is on the phone. Transaction or conversational requests each have a

---

[6] First Report and Order ¶ 527.

[7] Proposed national standard, as defined by the Ordering and Billing Forum ("OBF"). See discussion infra ¶ 34.

[8] This is the same electronic-manual handoff process being employed by at least one other Regional Bell Operating Company ("RBOC").

singular request and answer. On the other hand, a single billing information transmission contains all of the data for calls processed in the last day or last month. Using a transaction-type interface such as the OSS gateway for billing interfaces could be likened to asking for the contents of an Encyclopedia one sentence at a time. Rather a "batch" or bulk-data interface is the more appropriate software technique for exchanging large volumes of billing information. Such interfaces exchange large "blocks" or groups of billing records with a single request. With respect to billing information, USWC will offer the following batch interfaces:

- Daily Usage Data over the Network Data Mover ("NDM") or *via* the Centralized Message Distribution System ("CMDS") for interLATA collect, calling card, and third number billed messages;

- Monthly billing information utilizing Electronic Data Interchange ("EDI"), and

- Local Account Maintenance data utilizing the File Transfer Protocol ("FTP").

Development for these billing interfaces will be completed by January 1, 1997, using the existing national standards above described. USWC has already developed the capability to bill for nearly all of the required interconnection, resale, and unbundling products, and will complete these updates to its billing systems as state jurisdictions complete the process of product definition and pricing (including discounting).

OSS Interface Capabilities after January 1, 1997

20. Specifically, this waiver is sought for permission to provide electronic interface OSS support for design services later than January 1, 1997. And, to the extent the FCC deems that a waiver is necessary, USWC also requests a waiver with respect to electronic access OSS support with respect to unbundled network elements past the January 1st date.[9] Manual processes will be in place with respect to these latter types of offerings by January 1, 1997, which will allow the CLEC to call or fax an order or trouble report for unbundled elements and design services

[9] As the primary Waiver filing discusses, it is unclear whether USWC requires a waiver with respect to electronic interface OSS access in support of provisioning, maintenance and repair, and billing of unbundled network elements. In any event, however, to provide the Commission with a full and complete picture of USWC's planned deployment of electronic access interfaces into 1997, beyond support for POTS services, USWC discusses electronic interface OSS access and support for unbundled network elements throughout this Affidavit and the description of USWC's deployment plan.

into the dedicated CLEC service center. However, electronic OSS interface requirements for ordering and maintaining unbundled network elements are incomplete at this time, and are continuing to be developed. This uncertainty is not one being experienced by USWC alone. Rather, it extends as well to the National Standards organizations that are developing related requirements. As mentioned above, design services circuits require additional levels of system complexity, because they require totally different systems interfaces than those required for POTS. The grouping of design services with unbundled network elements makes eminent sense because unbundled loop circuits contain a "design services"-like process flow for the portion of the circuit that connects the loop to the CLEC's transport facility.

21. USWC proposes two additional releases of its electronic OSS interface to deliver capabilities not made available on January 1. The first will be available July 1, 1997, and will contain:

- Pre-ordering, Ordering, Provisioning, and Maintenance and Repair capabilities for resold design services products and unbundled network elements;

- Enhanced maintenance capabilities for POTS resale, including Trouble Report History and Circuit Test Results.

22. The second of these two releases will be available November 1, 1997, and will contain:

- Enhanced maintenance capabilities for design services resale and unbundled network elements, including Trouble Report History and Circuit Test Results.

The detailed schedule of the individual transactions supported in the OSS mediation interface is included as Attachment A.

23. USWC has already begun software development on the July and November releases just described. This development includes not only the resources of USWC's own software developers, but also the services of several third-party companies. The schedules for July and November have been based on this knowledge, and are not dependent upon the completion of the January release in order to begin.

24. Under normal circumstances, USWC would have desired to purchase rather than develop a software system for the electronic OSS interfaces. However, no commercial product offering would have met the FCC's First Report and Order January 1, 1997 implementation date, even though several are being developed for other RBOCs. This is primarily true because the business processes used by each of

the RBOCs vary. Similarly, each of the RBOCs has, over the years, purchased or built different OSSs to meet these unique business needs. As a result, the gateway for each will be somewhat different from company to company. USWC remains hopeful that a suitable third-party developer product will be found to meet this need, and will be continuing to evaluate systems offerings from the vendors in this area.

Support for Phased Implementation

25. USWC is basing its waiver request on impossibility. It is simply not possible to complete the type of ubiquitous electronic interface access, in a quality fashion, in the time frame established by the Commission in its First Report and Order. While implementing such access with respect to POTS is achievable based on pre-existing standards, national interface standards have not been developed to the same level of resolution and completeness for complex and unbundled services. Below, I discuss these matters in more detail.

26. As stated above in paragraph. 11, USWC held a not unreasonable interpretation of the requirements of the Telecommunications Act of 1996, which itself included little detail on the scope of access to OSS functionalities is support of resold services and unbundled network elements. Unlike the 1996 Act itself, the Commission's First Report and Order, contained an unanticipated number of detailed requirements with respect to OSS access obligations to be designed, developed and completed in less than five months (20 weeks).

27. In an effort to baseline the development estimates for this project, USWC recently asked experienced independent software vendor American Management Systems ("AMS") to assess the development required to deliver the FCC-required electronic interfaces. Specifically, USWC asked AMS if they would be capable of taking over the USWC development work as of December 1, 1996, and delivering the July and November phases of the interface. AMS' assessment was that the requirements of these two releases included more work than was viable for them to complete in the given schedule. While this is not an "apples-to-apples" comparison of the task set forth to USWC by the FCC in its August First Report and Order, nor the alternative schedule proposed by USWC, it does validate that another highly-capable software company could not commit to have delivered the totality of the FCC required OSS interfaces in the 20 weeks between August 10th and January 1st.

28. Approached a different way, in determining schedules for OSS development in my previous areas of responsibility at AT&T – Bell Laboratories (subsequently divested from AT&T to form Lucent Technologies), a common "back of the envelope" estimation technique applied frequently was that no more than 25-30% of a software development lifecycle schedule and resources will be devoted to actual software coding (i.e., the manual writing of the actual software code). The

remainder, and clearly the bulk, of the development and deployment schedule and human resource effort would be spent on gathering information and creating the "architecture" on the front-end, and on integration and system testing on the back-end. Applying that principle to the Commission's January 1st electronic access to OSS mandate, given the 20-week interval, this would translate into a total coding effort of 5-7 weeks for all of the capabilities described herein.

29. The complexity of what the Commission has required can probably best be appreciated by understanding the number and types of transactions or commands that an electronic interface is expected to support. This current USWC specification requires at least 24 separate commands across the full range of pre-ordering, ordering, provisioning, maintenance and repair. (These commands or transactions are summarized in Attachment B.) An example of the relative complexity of the task is described below at paragraph 32, in the context of a USWC MEDIACC ("MEDIated ACCess") example, where the creation of only a fraction of this number of commands required a significantly longer software development interval.

30. Another way to indicate the complexity of a software system is the number of other OSSs to which it needs to connect. These connections are determined by the architecture of the systems already in use at USWC, prior to the release of the FCC's First Report and Order. A nominally complex system will connect to from one to three other computers. The gateway USWC will be utilizing to fulfill the FCC's mandates needs to communicate intelligently with at least 14 different OSSs. Furthermore, this gateway needs to communicate with each of the different instances or "copies" of that type of system which USWC needs to operate to provide the necessary level of load and capacity requirements. An example would best illustrate this point. The system which is used to manage trouble tickets for a residential service ("1FR") is called LMOS (short for Loop Maintenance Operations System), licensed and supported by Lucent Technologies, Inc. USWC simultaneously operates seven different copies of the LMOS system, each covering a different geographic territory within the USWC region. The mediation gateway needs not only to physically connect to each of these seven copies, it also needs to be intelligent about how the data is divided between them so it can route the CLECs request to the proper machine. Although the number of copies USWC operates for each of its OSSs varies widely, there are on average 6-10 different active copies of any given system.

31. Bringing together each of these individual analyses from paragraphs. 28-30, the USWC mediation gateway therefore needs to interface with approximately 100 different computers, using different network technologies and vintages for each, building the capability for 24 commands, in about 7 weeks of actual software coding. This is simply not possible.

32. Some examples of prior USWC work in the area of electronic interfacing are also worth being knowledgeable about, to compare the complexity of the task imposed by the Commission in its First Report and Order with prior, similar, situations. While the deployment of these other interfaces was undertaken in the absence of any time-specific regulatory mandates for completion, the timeline from design development to deployment is not at all in synchrony with that which the Commission mandated with respect to OSS access. USWC worked to develop a nationally standard electronic interface to enable interexchange carriers ("IXC") to submit trouble reports to USWC. USWC's half of the interface is currently in operation, supported by a system called MEDIACC. The MEDIACC team took over two years jointly in cooperation with AT&T to develop the requirements and complete the implementation of the interface. This interface supports basic trouble ticketing features primarily for IXC-related products and not the full range of local services products, and requires an interface to but a single USWC system (Bellcore's Work Force Administration – "WFA"), running several different copies. It is precisely this same MEDIACC interface specification upon which the maintenance capabilities are proposed to be developed for all resale and unbundled products. The maintenance and repair features incorporated into this interface amount to less than one-third of the total capabilities required by the FCC for the electronic interfaces described in its First Report and Order. Furthermore, MEDIACC today only connects to one of the two principle systems used by USWC for trouble ticketing. The other connecting system is the LMOS system for POTS trouble reporting, described above. As a result, the software development was that much less difficult because there was one fewer interface to build and half as many system commands to be able to run on the host OSS (i.e., WFA alone *versus*. WFA and LMOS).

33. USWC has another similar experience in the development of a customer care solution for the soon-to-be-introduced USWC PCS wireless capabilities. This system, constructed almost exclusively by personnel from a high-quality independent software vendor, supports pre-ordering, ordering, provisioning, and maintenance of USWC's PCS customer services through linkages to existing USWC OSSs in a manner quite similar to the electronic interface requirements mandated by the Commission. The development of the Web-based command capabilities for this solution, interfacing with three different systems (2 - USWC's, 1-vendor supplied) took 30-35 personnel and 14 months to deliver from design development to final integration testing.

34. In its First Report and Order, the Commission noted that a "national gateway" would take approximately 18 months, after clear direction, to be implemented by ILECs. However, it ignored any impact of national standards work with respect to intermediate OSS access requests or their realization. There is a connection. USWC's electronic interface gateway, based on "Web" or Internet technology for the delivery of communications between systems, is based on the draft work of the OBF for the specification of the LSR forms. Those forms describe in detail the

agreed-upon layout of the service request record. The OBF has completed work on a draft of the LSR for Local Services resale (only). This draft will soon be submitted for formal approval by the OBF constituents, without being expanded to finish addressing all of the open issues. Issues yet be to be addressed by the OBF include those necessary to support complex products such as design services and to support unbundled network element orders. In lieu of support from completed standards work, USWC must do this work alone or in conjunction with interested CLECs, much as was the approach in the MEDIACC example discussed above.

35. Similarly, USWC's proposal for electronic interfaces with respect to maintenance and repair information is based on extensions of the work supported by the T1M1/Electronic Communications Implementation Committee ("ECIC") for IXC products trouble reporting. Just as with the OBF situation, the ECIC work on support for complex products and unbundled elements has been deferred until the initial work on basic POTS resale has finished. Again, USWC is left without any benefit resulting from the completion of national standards necessary to support these complex capabilities. The development of this standard alone is the reason for the further deferral of the enhanced trouble management capabilities described in the July and November releases.[10] USWC is reusing the capabilities that have been developed for the MEDIACC system for trouble report handling in the mediation gateway OSS interface, rather than building them over from scratch. This will allow these features to be offered *via* this nationally standard gateway as well as *via* the Web interface. This parallel development in the MEDIACC gateway will require the few extra months, since the interfaces to LMOS do not yet exist in MEDIACC, and support does not yet exist for the enhanced features.

36. Despite the difficulties and complexities outlined above, USWC is continuing to press forward to implement interim requirements just as it has with POTS resale to meet the quoted schedules. But the complexity of systems development required by the First Report and Order, together with the immature status of the national standards in these areas leaves USWC with no option other than to introduce the required capabilities in phases as described above throughout 1997.

Lack of Material Market Harm Due to an Extension:
CLEC Negotiations With USWC

37. I believe that, at least in USWC's region, there will be a lack of material harm to CLECs from the waiver herein requested by USWC and its proposed electronic interface access implementation plan. While USWC cannot honestly say that no CLEC will complain about the waiver request, or the relief sought herein, as a matter of fact USWC does not believe that CLECs will be materially harmed from the granting of the requested waiver.

---

[10] See footnote 5 for a description of enhanced trouble management features.

38. USWC and the major CLECs have continued to discuss the key issues involving OSS electronic interfaces. These discussions have led to several key "agreements in principle" that are now being reduced to contract language. Several understandings have resulted from those discussions, which are also supported by the documented testimony and transcripts from state arbitration hearings:

- CLECs agree that USWC is planning access to the necessary OSS capabilities. A few will argue for additional capabilities that USWC feels might not pass the test of "required for nondiscriminatory access to OSS." These are generally capabilities which USWC does not provide for its own customer service representatives.

- All CLECs agree that, if phasing is required, support for "1FR/1FB" (i.e., POTS) resale, including vertical switch features, is highest on their priority list, consistent with USWC's phased proposal.

- Most CLECs appear willing to extend the schedule for capabilities in order to employ interface specifications based on agreed-upon national standards.

Most of the outstanding issues remaining to be decided in CLEC negotiations involve the technical specifications of the protocols to be used to exchange messages.

Conclusion

39. Due to the depth and breadth of the requirements of the First Report and Order, USWC is faced with the requirement of implementing a systems access plan and architecture to provide for third-party access to OSSs that goes beyond any regulatory mandate that USWC has ever faced. Yet, the FCC has imposed a time frame that not even a stand-alone software and applications company could meet. USWC certainly cannot meet it. It has herein demonstrated "good cause" as to why.

40. In order to comply with the Commission's mandates, USWC must be able to develop and deploy electronic access to OSSs in phases, moving through the access supported by the greatest carrier demand to that supported by the least demand. In 1997, USWC will proceed with the development and implementation of a systems access architecture that provides electronic access functionalities to the greatest number of CLECs. The currently-completed POTS OSS access work will create the baseline platform that will support additional capabilities, as well as accommodate the development and implementation of national standards required by the CLECs and acknowledged as desirable by the FCC in its First Report and Order.

41. For the above reasons, I believe I have demonstrated "good cause" for USWC's Waiver Request. I also believe I have shown that CLECs will not suffer substantial or material harm from the granting of the request. The public interest will be served by granting the request because the ultimate system solutions will be the result of greater negotiation, reflection, and agreement than would otherwise be the case, and might well be educated by national standards.

Robert H. Van Fossen

Subscribed and sworn to before me this 10th day of December, 1996. Witness my hand and official seal.

My Commission Expires:

My Commission Expires Nov. 16, 1997

Notary Public

ATTACHMENT A

CAPABILITIES SCHEDULE

The following table defines FCC required capabilities, the commands that have been defined to provide these capabilities, and USWC's associated implementation schedule proposed for waiver consideration. The functions listed below are summarized in Attachment B.

Function	Availability Date POTS Services Resale	Availability Date Design Services Resale and Unbundled NEs
Pre-Ordering		
Address Verification	1-1-97	7-1-97
Service Availability	1-1-97	7-1-97
Customer Service Record Information	1-1-97	7-1-97
Ordering		
Work Order Request/Change/Cancel	1-1-97	7-1-97
Facility Availability	1-1-97	7-1-97
Appointment Availability/Reserve	1-1-97	Not used in Design Services
TN Availability	1-1-97	7-1-97
Circuit Request	Not used in POTS	7-1-97
Firm Order Confirmation	1-1-97	7-1-97
Status Query Request	1-1-97	7-1-97
Order Completion	1-1-97	7-1-97
Maintenance & Repair		
Open Trouble Report	1-1-97	7-1-97
Cancel Trouble Report	1-1-97	7-1-97
Status Trouble Report	1-1-97	7-1-97
Completion Notification	1-1-97	7-1-97
Verify Features	7-1-97	11-1-97
Modify TR	7-1-97	11-1-97
Escalate TR	Not used in POTS	11-1-97
Text Messaging	Not used in POTS	11-1-97
Trouble History	7-1-97	11-1-97
Testing	7-1-97	11-1-97

ATTACHMENT B

FUNCTIONAL CAPABILITIES

USWC based its determination of the functions to be provided to CLECs by utilizing the definitions specified in the FCC's First Report and Order at paragraph 514. Functions utilized by USWC service representatives and repair attendants were then evaluated to determine systems-access capabilities. USWC will continue to evaluate not only additional capabilities and associated costs as resold and unbundled product lines change and require additional access capabilities, but will also look toward the implementation of national standards as they evolve to support electronic commerce.

The following outlines and defines the functional capabilities to be provided through the USWC OSS access interfaces.

1. PRE-ORDERING

Pre-ordering refers to the set of activities whereby a service representative dialogs with the customer in order to obtain service availability information. In today's environment, the pre-order process is performed in conjunction with placing an order. Packaged as a separate activity, pre-order consists of the following functions: verify an address, check service availability, and return existing customer service record information.

Address Verification)("AVR")
This transaction will verify the end-customer's address. If the address does not match USWC records, the AVR transaction will return "partial match" addresses and/or help as appropriate to assist the CLEC in properly identifying the customer's address for verification. Once the address is verified, the AVR transaction will return the valid address and the current status (working, non-working, or pending out) and the date the status was posted for each line at the address. If USWC does not have a record of the address, the CLEC will have to contact USWC to input the record before the order can be submitted.

Service Availability
This transaction will return the list of products and services available for resale in the central office serving a particular Customer address. The USWC rates for the products and services will also be returned, but the CLEC discount will not be applied, because it may vary from CLEC to CLEC.

Customer Service Information
This gives the CLEC the ability to request the list of services and features USWC is currently providing to a customer and the rates USWC is charging for such services.

2. ORDERING

With the preorder steps completed, the requisite information will have been obtained from the CLEC and the initiation of a service order can begin. Submitting a service order will result in the provisioning and installation, if necessary, of a customer's service. The capabilities required to order service are: open a service order, check facility availability, reserve an appointment if technician work is required, reserve a telephone number if appropriate, cancel a service order, change a service order, send a firm order confirmation, support for work order status queries, and send notification of order completion.

Work Order Request/Cancel/Change

The work order provides the information and actions required for USWC to provision products, services and features. This transaction will also be used to cancel and change existing work orders. The information contained in a work order identifies the CLEC, the customer-desired due date, the service being requested, the order type (only change and migration to CLEC), POA (Proof of Authorization), class of service, telephone number and additional information needed to successfully provision the requested service to the customer. Once a work order is accepted by USWC, the assigned service order number will be returned to the CLEC. The CLEC can then use the service order number to status the work order.

Initially, this capability will allow the CLEC to electronically submit the service request, but because the gateway will not be able to fully complete the conversion into a valid USWC Service Order, the service request will be electronically forwarded to a manual order entry clerk, who will translate and submit the order on the CLEC's behalf. Firm order confirmation and status requests will be processed manually until the translation process is fully automated.

Facility Availability

For each new line requested, this transaction will indicate if existing facilities are available or if new facilities are required, and if a technician must be dispatched to provide the facilities requested at the customer's address. This transaction must be executed for any new line(s) requested. This transaction does not reserve facilities and does not guarantee that facilities will be available when the work order is submitted.

Appointment Availability/Reservation

This allows a CLEC to select an appointment from a calendar of available appointments. USWC will automatically execute this transaction after the Work Order has been submitted, where a dispatch is required. Appointment Reservation enables the CLEC to reserve an appointment after the appointment availability calendar has been displayed. USWC will return a confirmation number.

Design services resale (and therefore unbundled elements as well) do not use appointments, but instead rely upon a standard "critical dates" template, which will be provided as an alternative to appointment scheduling.

Telephone Number ("TN") Availability
This enables a TN to be assigned to a line. The CLEC customer service representative will be able to accept the TN or exchange the TN for two other numbers. One of these three TNs must be selected to proceed with the Work Order. If the customer requests a specific number or a vanity number, CLEC must call the USWC Number Assignment Center ("NAC") and the request will be handled manually, consistent with how USWC processes these requests.

Return Telephone Numbers enables a CLEC to reject the unused TNs returned by the Telephone Number Availability transaction. Telephone Number Accept allows a CLEC to reserve one telephone number for a period of one (1) day so that the customer can be informed of the TN(s) prior to the actual submission of a Work Order. The Work Order must be submitted before the TN expires, otherwise the TN will be returned to the available pool of TNs and may no longer be available.

Circuit Request
This enables the CLEC to request and obtain a circuit ID for designed services.

Firm Order Confirmation
Firm Order Confirmation means that USWC has received the order and assigned an order number for tracking. However, validation checks are performed at multiple stages in the ordering process subsequent to this step, so this confirmation only confirms the receipt of the order, and not that it is error-free.

Status Query
This transaction will allow the CLEC to obtain the status of a work order. USWC will return the current status, remarks, and due date for specified work order. Order Completion and Jeopardy Notification are status indications potentially returned through this transaction.

Order Completion
This provides a daily (Monday - Saturday) electronic report which identifies all work orders that were completed by USWC on that date. This report is called the CLEC Completion Report.

3. REPAIR

Repair functions allow the CLEC to report trouble with communications circuits and services provided by USWC. The functions, processes, and systems used in repair are based on a Trouble Report ("TR"), which contains information about the customer, the trouble, the status of the work on the trouble and the results of the investigation and resolution efforts. These business processes have been summarized and will be made available to the CLEC in the following functional set: open a trouble report, cancel a trouble report, send notification of status change and close a trouble report.

Open Trouble Report
This gives the CLEC the capability to submit a trouble report to USWC. The Open Trouble Report Response contains status information about the trouble.

Cancel Trouble Report
This instruction allows the CLEC to cancel a previously opened trouble report.

Status Trouble Report
This provides notification that the status of a previously opened trouble report has changed.

Completion Notification
This provides notification that a trouble report has been closed because the trouble was resolved.

Verify Feature
This transaction is used to verify which vertical switch features the customer currently owns.

Modify Trouble Report
This allows a change to certain data in a trouble report which was previously opened, possibly affecting current USWC repair activities. Trouble reports are only readable or modifiable by the CLEC that initiated the report.

Escalate Trouble Report
This allows a CLEC to bring a trouble report that the CLEC had previously opened with USWC to the attention of a higher level of supervision. As with the modify command, it is only allowed on trouble reports which were entered by the CLEC requesting the escalation. Process descriptions for how such escalations are subsequently treated are beyond the scope of systems testimony. This feature is only available for services (i.e., circuits) supported in Work Force Administration ("WFA") and is not used for POTS.

Text Messaging
This supports the exchange of written electronic communication between USWC and CLEC personnel for the purpose of resolving the trouble. The messages are logged in the trouble report. Specific uses of this messaging include allowing the CLEC to add descriptive information about the trouble, and allowing USWC to request additional trouble information. This feature is only available for services (i.e., circuits) supported in WFA, and is not used for POTS.

Trouble History
This provides the CLEC with trouble history information currently retained on the circuit.

Testing
This notifies a CLEC of the results of initial or subsequent circuit tests for a trouble report previously opened by that CLEC.

4. BILLING

Upon completion of the turn up of the requested service or element from the CLEC, USWC's billing process will be updated to charge the CLEC for the service or element requested as well as begin to collect the relevant CLEC end user usage data. On a monthly cycle USWC will bill the CLEC for the services and elements they have purchased. On a daily basis USWC will

provide the CLEC with usage data so that they may bill their customers appropriately. Additionally, USWC will provide the CLEC with Local Account Maintenance data indicating when a customer has moved their service from the CLEC to another provider.

Summary Billing

Monthly billing information will include all connectivity charges, credits, and adjustments related to network elements and USWC-provided local service. USWC will utilize the Customer Record Information System ("CRIS") and the existing EDI standard for the message format and the transmission of monthly local billing information. EDI is an established standard under the auspices of the American National Standards Institute/Accredited Standards Committee ("ANSI/ASC") X12 Committee. A proper subset of this specification has been adopted by the TCIF as the "811 Guidelines" specifically for the purposes of telecommunications billing.

Usage Data

Daily usage data is the accumulated set of call information for a given day as captured, or "recorded," by the network switches. USWC will provide this data to CLECs with the same level of precision and accuracy it provides itself. Such precision cannot and will not exceed the current capabilities of the software in the switches today.

Using the Centralized Message Distribution System ("CMDS"), USWC will also include interLATA collect, calling card, and third number billed messages to the CLEC as part of this daily message data.

Win/Loss Reporting

The Local Account Maintenance report consists of the list of phone numbers to which the carrier started providing service since the last report, and the list of phone numbers to which the carrier is no longer providing service since the last report. Some CLECs have requested that the customer name be supplied with this information, but USWC may no longer possess the customer name if service has been provided through another CLEC. Since this portion of the report cannot be provided with any reliability, only the phone number (or appropriate billing account identification) is proposed.

ATTACHMENT C

USWC OSS INTERFACE GATEWAY ARCHITECTURE

1. Overview

When attempting to understand the complexity of the task of developing an Operations Support System ("OSS") electronic interface Gateway, it is useful to understand the software architecture from a logical perspective that is required to provide the specified requirements. Figure 1 is a representation of the architecture which will support a CLEC's requests for pre-ordering, ordering, provisioning, and maintenance and repair. (Note: Billing data is handled through other "batch" interfaces and not *via* this Gateway.)

This gateway will act as a mediation or control point between CLECs and USWC OSS's. It is responsible for implementing security for the interface, protecting the integrity of USWC's network and its databases, and ensuring that information privacy is maintained (e.g., Customer Proprietary Network Information or "CPNI").

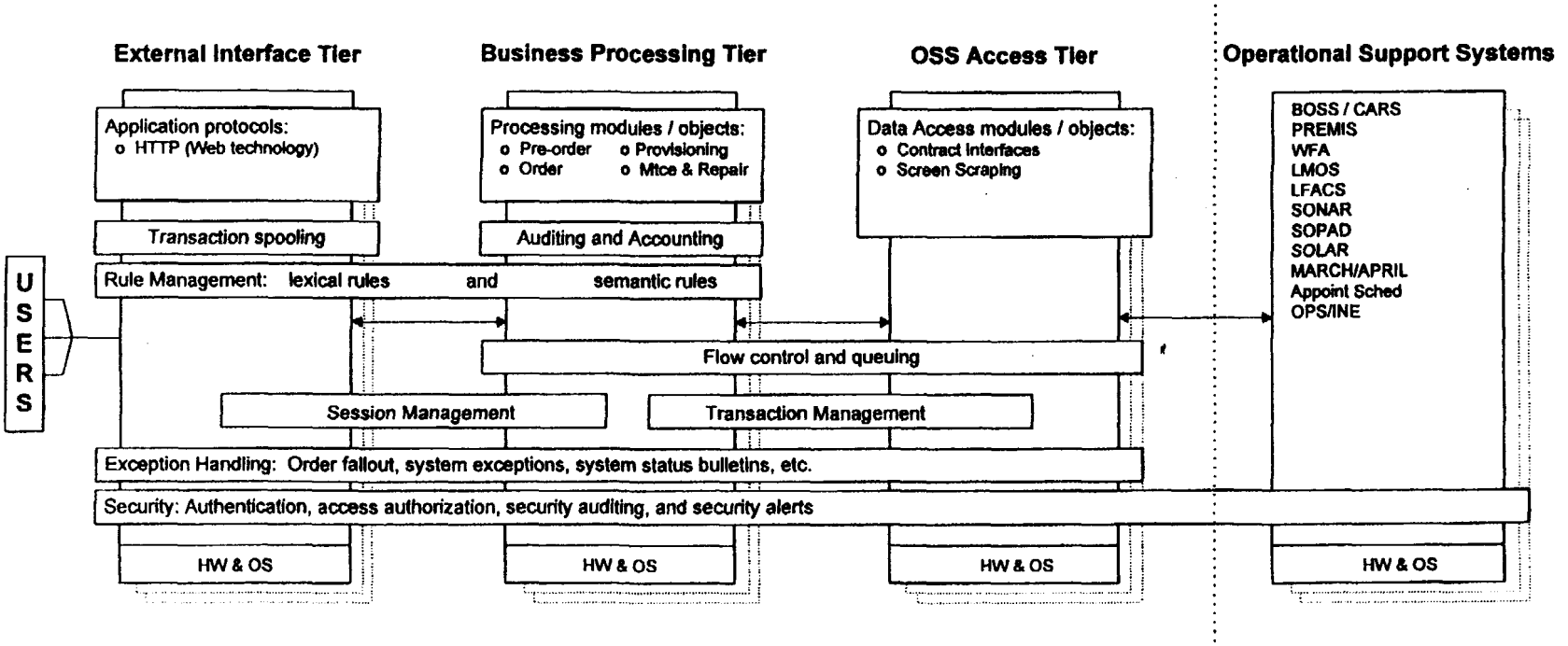
The architecture is divided into three layers, as indicated in Figure 1:

- The External Interface Tier ("EIT") is the software layer that provides the communication function between the Gateway and the CLEC. It contains the software that implements the protocols supported by the Gateway. In this case, the transport protocol underlying the Internet or Web-technology, called HTTP (Hyper Text Transport Protocol), is supported. This could be expanded to support other protocols specified in National Standards as they are developed.

- The Business Processing Tier ("BPT") contains the software that defines the commands that the CLEC users are able to execute. For example, this layer understands that "*create trouble ticket*" is a supported command, and it knows what Loop Maintenance Operations Systems ("LMOS") or Work Force Administration ("WFA") transactions need to be executed in order to process this command. Further, this layer also has responsibility for any semantic validation of the command request, such as checking that the requesting CLEC is indeed the owner of the circuit for which the trouble report is being submitted.

- The OSS Access Tier ("OAT") connects the Gateway to the other USWC Operation Support Systems. This layer contains the software that knows whether there is a machine-to-machine interface (or application programming interface - "API") to the designated OSS, or whether terminal emulation (or "screen scraping") is to be used. This layer also knows how to format the request in the way the receiving OSS will understand.

Figure 1: Logical Architecture, USWC Mediated Access for Pre-Order, Order, Provision, Maintenance & Repair



Work in progress – details subject to change without notice

1.1. Technology Selection

USWC is developing the Gateway using the software technologies that underlay the public Internet or World Wide Web ("www"). This technology is typically refered to by two acronyms: HTML, for Hyper Text Mark-up Language, which is the software language used to defined the screen displays referred to as Web pages; and HTTP, which is the collection of protocol software that carries the commands and data across the Internet. This technology was selected for a number of reasons:

- Web technology has been successfully used by USWC in the rapid development and deployment of a customer service application[1] which is used while the customer is on the phone to determine the availability of telephone facilities to the customer's premises. The result is then used to decide what installation interval to offer to the customer.

- Customer service representatives use a so-called "Web browser" to connect with the application from their existing desktop computer. No USWC software development was required on the desktop to deploy this application. This greatly simplified the development and distribution problems. These browsers are available for an exceptionally wide range of hardware and software environments (by today's computing standards) from Microsoft, Netscape, and other independent software suppliers. USWC does not need to specify requirements or constraints for the CLEC's customer service representative's computing environment.

- The rapid growth of the Internet has demonstrated the viability of this technology as one that can and is being used in commercial settings for interfacing between companies. No other software networking technology in computing history has seen this kind of widespread growth. Nearly all of the telecommunications companies looking to becoming CLECs have some experience with this technology as demonstrated by the existence of their own Web pages.

- While HTTP/HTML is primarily used to develop user-readable screens, these screens can be readily interpreted by other software programs to develop machine-to-machine software interfaces. The software to perform this function already exists in the public domain. Therefore, CLECs have the option of using this same USWC interface either directly as a human interface, or developing a Gateway interface from their own software applications to link to USWC OSS's.

---

[1] More information on this USWC customer application and this use of the Netscape browser can be found in a recent article authored by CIO Dave Laube, which is posted on Netscape's own home page.

1.2. Security

No discussion of the commercial viability of Internet-based applications would be complete without examining the security issues. Internet security mechanisms are only in their infancy, and have not as yet been proven completely foolproof. Therefore, USWC is **not** proposing to make its OSS gateway interface accessible *via* the public Internet or World Wide Web. Two interfaces are offered in the proposal. The primary access mechanism is direct telecommunications links between the CLEC and USWC, complete with a security firewall capable of screening out unexpected traffic. The alternative mechanism will be dial-up modems, secured with commercial "smart card" technology administered by USWC using SecureID cards. Since the number of companies that will use this OSS interface is relatively small, and because the traffic volume of this link is eventually expected to be reasonably high, the use of private links is in fact technically desirable to support the traffic throughput.

1.3. National Standards

The commands or transactions supported by the Gateway interface should eventually be based upon national standards that allow the ILECs and CLECs to interface in a common way. These standards, as described in the affidavit text, have not been completed to enable development yet. However, USWC has made every effort to base its work on the standards work completed thus far. The Ordering commands are based on the current draft version of the Local Service Request forms resulting from the October, 1996 work of the Ordering and Billing Forum ("OBF"). Similarly, the Maintenance commands have been developed along guidelines used in the Electronic Communication Implementation Committee ("ECIC") work on the Interexchange Carrier ("IXC") interface (see MEDIACC example, paragraph **3x**, main text).

This layered architecture approach maximizes the likelihood that the software system can be easily modified and enhanced in the future to accommodate changes, such as those expected as national standards work is completed.

2. Architecture Subsystem Detail

USWC has defined and created this architecture and will be testing and implementing it in the short time span of a four-month period, as required by the FCC in its First Report and Order. By necessity, the level of robustness of each layer is directly proportional with the timeframe to deliver. USWC will continue to refine and improve the robustness of the interface software concurrent with the introduction of new features, paced with the growth of the business requirements of USWC and the CLECs.

2.1. External Interface Tier (EIT)

The EIT is the gateway that connects the CLECs to U S WEST's systems and capabilities. The essential modules found in the EIT are:

2.1.1. *Application Protocols.* Provides support for one or more application protocols that encapsulate transaction requests and system responses, and transport them between the CLECs and USWC. Initially supports HTTP.

2.1.2. *Transaction Spooling.* Provides support for queuing specific incoming transactions and specific transaction outgoing responses. Note that the transaction data format is totally independent of any particular application protocol. Also note that only asynchronous transactions will be spooled. If a synchronous transaction cannot be performed, this will be detected by the Business Processing Tier ("BPT") and the customer notified to try again later.

2.1.3. *Session Management.* The EIT works with the BPT to maintain the context of each user's session. Sessions, in the sense of the user's queued transactions and responses, have a persistent state. When a user ends his or her session, the state of the user's transactions is maintained.

2.1.4. *Lexical Rule Checking.* Invalid transactions (exceptions) are not queued on the BPT, but instead are returned to the user with an explanation of the problem. Exceptions of this form should be noted in the log, because they are either the result of an error in programming or a user error. This information will be useful for subsequent root cause analysis.

2.1.5. *Security Authentication.* Only valid users of the system shall have access to the functions of the EIT. Session logs are recorded by the EIT.

2.2. Business Processing Tier

The BPT is responsible for the successful execution of the transaction set. The essential modules found in the BPT are:

2.2.1. *Transaction Processing Modules.* These modules encapsulate logically related transactions, such as pre-ordering, ordering and provisioning.

2.2.2. *Semantic (Business) Rule Checking.* Invalid transactions (exceptions) are removed from the input queue and returned to the user with an explanation of the problem. Inappropriate (or validly blocked) responses from the OSS Access Tier ("OAT") are screened before returning the OSS response to the user.

2.2.3. *Flow Control and Queuing.* The BPT works in cooperation with the OAT to make sure the back-end systems are not overloaded—and that the queued transactions proceed at an efficient pace.

2.2.4. *Session Management.* The BPT keeps requests and responses in persistent queues, as well as guaranteeing that responses are returned to the correct users.

2.2.5. *Transaction Management.* The BPT is responsible for the overall transaction integrity—which means processing each transaction to a known endpoint state. The BPT is also responsible for keeping an audit trail of all transactions, and must provide the means for accounting and security operations.